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EXAMINER	
KASHNIKOW, ERIK	

ART UNIT	PAPER NUMBER
1794	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/595,869	BAKER ET AL.	
	Examiner	Art Unit	
	ERIK KASHNIKOW	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 May 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/17/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: **(a) and (b)**. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: **p**. It is noted by Examiner that P(a) and P(b) are in the specification but p by itself is not. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of

an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-32 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claims 1, 6-13 and 20-23 are indefinite for claiming the invention in terms of physical properties rather than the chemical or structural features that produce said properties. *Ex parte Slob*, 157 USPQ 172, states, "Claims merely setting forth physical characteristics desired in an article, and not setting forth specific composition which would meet such characteristics, are invalid as vague, indefinite, and functional since they cover any conceivable combination of ingredients either presently existing or which might be discovered in the future and which would impart said desired characteristics." Also, "it is necessary that the product be described with sufficient particularity that it can be identified so that one can determine what will and will not infringe." *Benger Labs, Ltd v. R.K. Laros Co.*, 135 USPQ 11, *In re Bridgeford* 149 USPQ 55, *Locklin et al. v. Switzer Bros., Inc.,* 131 USPQ 294. Furthermore, "Reciting the physical and chemical

characteristics of the claimed product will not suffice where it is not certain that a sufficient number of characteristics have been recited that the claim reads only on the particular compound which applicant has invented." *Ex parte Siddiqui*, 156 USPQ 426, *Ex parte Davission et al.*, 133 USPQ 400, *Ex parte Fox*, 128 USPQ 157.

6. The term "within a range" in claims 1 and 23 is a relative term which renders the claim indefinite. The term "within a range" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

7. The term "relatively" in claims 2, 3, 24 and 25 is a relative term which renders the claim indefinite. The term "relatively" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

8. The term "substantially" in claims 14 and 28 is a relative term which renders the claim indefinite. The term "relatively" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

9. Claims 2 and 24 are rejected to because it is unclear whether the diameter referred to is the inner or outer diameter.

10. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board

of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 7 recites the broad recitation 4-12 MPa, and the claim also recites 5-10 and 5-7Mpa which are the narrower statements of the range/limitation.

11. Further claim 8 recites the broad recitation 0.3-0.9%, and the claim also recites 0.4-0.8 and 0.6-0.8% which are the narrower statements of the range/limitation.

12. Further claim 9 recites the broad recitation about 1.7% and the claim also recites 1.1-1.5% and about 1.2% which are the narrower statements of the range/limitation.

13. Further claim 10 recites the broad recitation about 11% and the claim also recites 2-11%, 3-10% and about 5-9% which are the narrower statements of the range/limitation.

14. Further claim 11 recites the broad recitation 10-17MPa, and the claim also recites 10-15MPa and 11-15MPa which are the narrower statements of the range/limitation.

15. Further claim 12 recites the broad recitation 1000-1650MPa, and the claim also recites 1330-1650MPa which is the narrower statement of the range/limitation.

16. Further claim 13 recites the broad recitation 0.04-0.25 S_1, and the claim also recites 0.05-0.25S_1 which is the narrower statement of the range/limitation.

17. Further claims 15 and 16 recite the broad recitation pozzolanic material and the claims also recite flyash, silica fume and slag which are the narrower statement of the range/limitation.

18. Further claim 17 recites the broad recitation discontinuous fibers and the claims also recite metallic, ceramic and polymeric fibers which is the narrower statement of the range/limitation.

19. Further claim 20 recites the broad recitation 20-40GPa, and the claim also recites 30-35GPa which is the narrower statement of the range/limitation.

20. Further claim 21 recites the broad recitation 40-100MPa, and the claim also recites 45-75 and 50-70MPa which are the narrower statements of the range/limitation.

21. Further claim 22 recites the broad recitation 5-14MPa, and the claim also recites 6-12 and 6-9MPa which are the narrower statements of the range/limitation.

22. Claim 24 is rejected for depending upon a later claim. Appropriate correction required. For examination, the claim is being considered to depend on claim 23

Claim Rejections - 35 USC § 103

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

24. Claims 1-13, 15, 16 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merkley et al.(US 2002/0059886) in view of French (US 3,575,445).

25. In regards to claim 1 Merkley et al. teach a cement material used to make pipes (paragraphs 0008)

26. In regards to claims 15 and 16 Merkley et al. teach using a mixture of Portland cement mixed with fly ash as well as Portland cement and slag cement (defined as alkali active in paragraph 0029 of the instant application) cement for use in construction materials, an example of which would be pipes (paragraph 0140).

27. As stated above Merkley et al. and Hjulian teach cement pipes made from a mixture of Portland cement and slag cement, however they are silent with regards to the wall thickness and diameter of the pipes.

28. French teaches cement pipes with insulated properties (column 1 lines 7-8). In regards to claims 2-5 and 24-27 French teaches that it is known in the art to change the inner diameter and physical characteristics of the cement pipe (i.e. the wall thickness) to correspond to the physical characteristics required (column 5 lines 5-11). Therefore absent a showing of criticality with respect to "wall thickness to diameter ratio" (a result effective variable), it would have been obvious to a person of ordinary skill in the art at the time of the invention to adjust the "wall thickness to diameter ratio" through routine experimentation to values, including those presently claimed in order to achieve "desired physical characteristics required for a cement pipe system". It has

been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

29. It has long been an axiom of United States patent law that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. *In re Peterson,* 315 F.3d 1325, 1330 (Fed. Cir. 2003) ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); *In re Aller,* 220 F.2d 454, 456 (CCPA 1955) ("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."). "Only if the 'results of optimizing a variable' are 'unexpectedly good' can a patent be obtained for the claimed critical range." *In re Geisler,* 116 F.3d 1465, 1470 (Fed. Cir. 1997) (quoting *In re Antonie,* 559 F.2d 618, 620 (CCPA 1977)).

30. In regards to claims 1, 6-13 and 20-22 as all the materials in the instant invention are taught by Merkley et al. and French the pipe would intrinsically have the same physical, chemical and mechanical properties.

31. Claims 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merkley et al.(US 2002/0059886) in view of French (US 3,575,445) and Davis et al. (US 6,196,272).

32. As stated above Merkley et al. and French teach cement pipes made from a mixture of Portland cement and slag cement, however they are silent with regards to a substantially uniform substantially circular cross section.

33. Davis et al. teach insulated pipes (column 1 lines 4-6).

34. In regards to claim 14 Davis et al. teach that the pipes or conduits have a substantially uniform and circular cross section (column 5 lines 14-20).

35. One of ordinary skill in the art at the time of the invention would be motivated to modify the invention of Merkley et al. and French with that of Davis et al. because the invention of Davis et al. offers ease and convenience in manufacturing and handling the pipes and conduits (column 5 lines 14-21).

36. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merkley et al.(US 2002/0059886) in view of French (US 3,575,445) and Li et al. (US 2002/0019465).

37. As stated above Merkley et al. and French teach cement pipes made from a mixture of Portland cement and slag cement, however they are silent with regards to a an engineered cementitious composite (hereinafter ECC).

38. In regards to claim 13 Li et al. teach ECC (paragraph 0003) for use in pipes (paragraph 0012)

39. One of ordinary skill in the art at the time of the invention would be motivated to modify the invention of Merkley et al. and French with that of Li et al. because the invention of Li et al. offers increased ductility and toughness (paragraph 0008).

40. Claims 19, 23-27, 29 and 32 rejected under 35 U.S.C. 103(a) as being unpatentable over Merkley et al.(US 2002/0059886) in view of French (US 3,575,445) and Hjulian (US 2,694,349).

41. As stated above Merkley et al. and French teach cement pipes made from a mixture of Portland cement and slag cement, however they are silent with regards forming the pipe using a dewatering extrusion method.

42. French teaches cement pipes with insulated properties (column 1 lines 7-8). In regards to claims 24-27 French teaches that it is known in the art to change the inner diameter and physical characteristics of the cement pipe (i.e. the wall thickness) to correspond to the physical characteristics required (column 5 lines 5-11). Therefore absent a showing of criticality with respect to "wall thickness to diameter ratio" (a result effective variable), it would have been obvious to a person of ordinary skill in the art at the time of the invention to adjust the "wall thickness to diameter ratio" through routine experimentation to values, including those presently claimed in order to achieve "desired physical characteristics required for a cement pipe system". It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

43. It has long been an axiom of United States patent law that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003) ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is

the optimum combination of percentages."); *In re Aller,* 220 F.2d 454, 456 (CCPA 1955) ("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."). "Only if the 'results of optimizing a variable' are 'unexpectedly good' can a patent be obtained for the claimed critical range." *In re Geisler,* 116 F.3d 1465, 1470 (Fed. Cir. 1997) (quoting *In reAntonie,* 559 F.2d 618, 620 (CCPA 1977)).

44. Hjulian teaches a method for making cement pipes (column 1 lines 15-19).

45. In regards to claim 23 Hjulian et al. teaches that the pipes are formed by a dewatering extrusion process (claims 5 and 6), and that the pipe is cured (column 8 lines 70-77).

46. In regards to claim 19 Examiner is treating it as a product by process claim, specifically regarding the term "produced by a dewatering extrusion". It has been shown that even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process (MPEP 2113 and *In re Thorpe,* 777F.2d 695, 698, 227 USPQ 964, 966).

47. In regards to claims 19 and 32 absent a showing of criticality with respect to "the water to binder ratios" (a result effective variable), given that the water to binder ratio would effect the properties of the cement such as strength and hardness it would have been obvious to a person of ordinary skill in the art at the time of the invention to adjust

the "water through binder ratios" through routine experimentation to values, including those presently claimed in order to achieve "an effective cement pipe forming process". It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). It has long been an axiom of United States patent law that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. *In re Peterson,* 315 F.3d 1325, 1330 (Fed. Cir. 2003) ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); *In re Aller,* 220 F.2d 454, 456 (CCPA 1955) ("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."). "Only if the 'results of optimizing a variable' are 'unexpectedly good' can a patent be obtained for the claimed critical range." *In re Geisler,* 116 F.3d 1465, 1470 (Fed. Cir. 1997) (quoting *In re Antonie,* 559 F.2d 618, 620 (CCPA 1977)).

48. In regards to claim 29 the limitations have been previously addressed above.

49. One of ordinary skill in the art at the time of the invention would be motivated to modify the invention of Merkley et al. French with that of Hjulian because the invention of Hjulian offers a process that can make pipes of unlimited length and with high density and great strength (column 1 lines 19-28).

50. Claims 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merkley et al.(US 2002/0059886) in view of French (US 3,575,445) , Hjulian (US 2,694,349) and Davis et al. (US 6,196,272).

51. As stated above Merkley et al. French and Hjulian teach cement pipes made from a mixture of Portland cement and slag cement, however they are silent with regards to a substantially uniform substantially circular cross section.

52. Davis et al. teach insulated pipes (column 1 lines 4-6).

53. In regards to claim 14 Davis et al. teach that the pipes or conduits have a substantially uniform and circular cross section (column 5 lines 14-20).

54. One of ordinary skill in the art at the time of the invention would be motivated to modify the invention of Merkley et al. French and Hjulian with that of Davis et al. because the invention of Davis et al. offers ease and convenience in manufacturing and handling the pipes and conduits (column 5 lines 14-21).

55. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merkley et al.(US 2002/0059886) in view of French (US 3,575,445) and Oka et al. (GB 2 073 653).

56. As stated above Merkley et al. teach cement pipes made from a mixture of Portland cement and slag cement, however they are silent with regards to the inclusion of fibers with lengths in the mm range.

57. In regards to claim 17 Oka et al. teach concrete pipes (page 1 line 7) and listed Portland cement as a preferred material for making these objects (page 7 line 46). Oka

et al. further teach the inclusion of polymer fibers 6mm in length included in the Portland cement (page 7 line 49).

58. One of ordinary skill in the art at the time of the invention would be motivated to modify the invention of Merkley et al. French with that of Oka et al. because the invention of Oka et al. offers an inexpensive way (page 2 lines 20-25) for improving bending tensile and impact strength of cement objects (page 1 lines 5-10).

59. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merkley et al.(US 2002/0059886) in view of French (US 3,575,445) and Hjulian (US 2,694,349) and Li et al. (US 2002/0019465).

60. As stated above Merkley et al. French and Hjulian teach cement pipes made from a mixture of Portland cement and slag cement, however they are silent with regards to a an engineered cementitious composite (hereinafter ECC).

61. In regards to claim 13 Li et al. teach ECC (paragraph 0003) for use in pipes (paragraph 0012)

62. One of ordinary skill in the art at the time of the invention would be motivated to modify the invention of Merkley et al. French and Hjulian with that of Li et al. because the invention of Li et al. offers increased ductility and toughness (paragraph 0008).

63. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merkley et al.(US 2002/0059886) in view of French (US 3,575,445) Hjulian (US 2,694,349) and Oka et al. (GB 2 073 653).

64. As stated above Merkley et al., French and Hjulian teach cement pipes made from a mixture of Portland cement and slag cement, however they are silent with regards to the inclusion of fibers with lengths in the mm range.

65. In regards to claim 17 Oka et al. teach concrete pipes (page 1 line 7) and listed Portland cement as a preferred material for making these objects (page 7 line 46). Oka et al. further teach the inclusion of polymer fibers 6mm in length included in the Portland cement (page 7 line 49).

66. One of ordinary skill in the art at the time of the invention would be motivated to modify the invention of Merkley et al. French and Hjulian with that of Oka et al. because the invention of Oka et al. offers an inexpensive way (page 2 lines 20-25) for improving bending tensile and impact strength of cement objects (page 1 lines 5-10).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIK KASHNIKOW whose telephone number is (571)270-3475. The examiner can normally be reached on Monday-Friday 7:30-5:00PM EST (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on (571) 272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Erik Kashnikow
Examiner
Art Unit 1794

/Callie E. Shosho/
Supervisory Patent Examiner, Art Unit 1794